CHIRONOMIDAE (DIPTERA) IN THE ALBANY MUSEUM PART 1

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ABSTRACT

Four new species of Chironomidae from South Africa are described: *Metriocnemus capensis* sp. nov., *Polypedilum (Pentapedilum) chutteri* sp. nov., *Polypedilum (Polypedilum) hastaferum* sp. nov., and *Skusella freemani* sp. nov., also a possible new species of *Pagastiella*. *Paralauterborniella nigrohalteralis* Malloch is reported for the first time from Subsaharan Africa and the aberrant *Kribiothauma pulchellum* Kieffer is redescribed in detail with its putative larva.

Keywords: New species, *Chironomidae, Orthocladiinae, Chironomini*, South Africa, Namibia

INTRODUCTION

The Albany Museum, Grahamstown, Eastern Cape Province, South Africa, is the repository of large collections of aquatic invertebrates. These have come from the National Institute of Water Research (now Watertech) the Freshwater Research Unit, Zoology Department, University of Cape Town, and from extensive river studies carried out by the professional staff of the museum. The study of these collections has greatly increased the knowledge of the biodiversity of the freshwater fauna of southern Africa. The Chironomidae are very well represented in these collections and many new species have been discovered. Some are of ecological importance in South African river communities and these and rarer forms are of taxonomic interest. Harrison (2000) deals with four of these and this paper describes four new species, records the finding of two previously considered Holarctic genera, *Pagastiella* and *Paralauterborniella,* in the Subsaharan (Afrotropical) region of Africa and redescribes the aberrant *Kribiothauma pulchellum* Kieffer.

METHODS

Pinned specimens were treated as follows: the wings were removed first from the dried specimen and mounted directly in Canada balsam, then the rest of the specimen was macerated in 5% potassium hydroxide at room temperature for 24 hours; the KOH was removed by placing it in 70% ethanol for about 10 minutes, and then into 96% ethanol, it was dissected and mounted in Canada balsam dissolved in cellosolve on the same slide as the wings. Specimens preserved in alcohol were dissected and mounted in the same type of balsam. Drawings were made by means of a drawing tube on a compound microscope.

Measurements were made with an eyepiece micrometer in the compound microscope. Morphological terminology is aceording to Sæther (1980) and the description of the males follows the style of Cranston, Oliver and Sæther (1989) and Cranston, Pinder, Dillon and Reiss (1989), using their generic definitions. The description of females follows the style of Sæther (1977).

The holotypes and paratypes of all the species described here and other material used in the descriptions have been deposited in the Albany Museum, Grahamstown, 6140, Eastern Cape Province, South Africa. Representatives of the material collected in Namibia and listed under the KUN catalogue are deposited in the collections of the State Museum, Windhoek. The catalogue numbers of the specimens are given in the text.

Abbreviations used in this paper are:

AR *antennal ratio. Ratio of length of apical flagellomere to combined length of basal flagellomeres.*

LR *leg ratio. Ratio of length of tarsomere 1 to length of tibia.*

SV *'Schenkel-Schiene Verhältnis'. Ratio of femur plus tibia to tarsomere 1.*

BV *'Beinverhältnisse'. Combined length of femur, tibia and tarsomere 1 divided by length of tarsomeres 2 to 5.*

ADH *A D Harrison (Collector).*

TAXONOMIC DESCRIPTIONS

ORTHOCLADIINAE

***Metriocnemus capensis* sp. nov. (Figs 1-5)**

The male of this species falls within the definition of Cranston, Oliver and Sæther (1989) and is of interest as it is the only one found so far in South Africa south of Pretoria. One specimen of *Metriocnemus wittei* Freeman was captured near there in 1954 and could have come from a tree hole (Freeman, 1956). The reason for this apparent absence of this genus is probably that chironomids of tree holes and mossy streams have not been studied in Southern Africa. Cranston and Judd (1987) show that this genus has a very wide ecological diversity.

ADULT MALE (N = 3, 2 mounted)

As per generic definition in Cranston, Oliver and Sæther (1989)

Body length. 4.1 mm
Wing length. 2.4 mm

Colour. Head and antennae brown; thorax: background light brown, scutal stripes separate and dark brown, preepisternum and postnotum dark brown, scutellum brown, legs light brown: abdomen: tergites dark brown, II to IV somewhat paler distally, hypopygium dark brown.

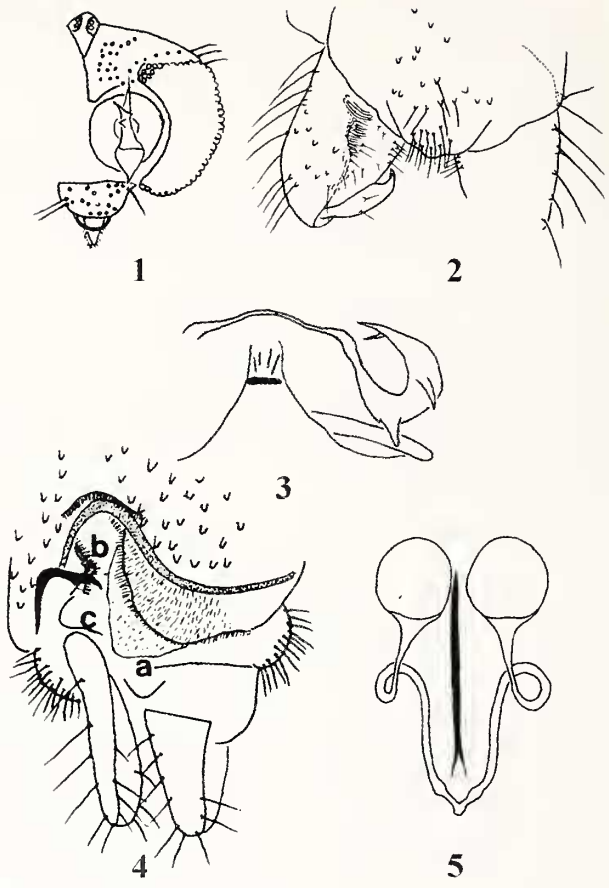
Head (Fig. 1). AR O.97. 13 flagellomeres, plume dense, one large preapical seta on end flagellomere, groove beginning at flagellomere 4, flagellomeres without sensilla chaetica except for few at the tip of 13. Eyes bare with short, wedge-shaped dorsomedial extension; tentorium as in Fig. 1. Length of palp segments (there was variation between the two specimens) 36, 45, 180 and 198, 150 and 153, 210 µm; no subterminal sensillae on segment 3.

Thorax. Setation: lateral antepronotals 14, dorsocentrals about 50, biserial, posterior prealars 40, largely biserial, scutellars 18 per side, partly biserial. Acrostichals beginning near antepronotum.

Wings. Anal lobe weak, similar in shape to that of *M. knabi* Coquillett (Cranston, Oliver and Sæther, 1989), membrane densely covered with setae.and with fine punctation. Vein setation: all veins densely setose. Squama with about 32 setae.

Legs. LR fore 0.70 and 0.73, mid 0.43, hind 0.35 and 0.36. SV fore 0.38 and 0.40, BV fore 2.6 and 2.7. No sensilla chaetica on tarsomeres. Pseudospurs present: midleg, on tarsomeres 1, 2 (one specimen on 3), hind leg on tarsomeres 1 and 2. No pulvilli.

Hypopygium (Fig. 2). Numerous anal tergite setae, anal point absent, virga weak spines appear to be fused, gonocoxite with strongly reduced inferior volsella, the region is strongly chitinized with irregular ridges, small, roughly rectangular chitinized plate between gonocoxite bases. Gonostylus slender, crista dorsalis absent, megaseta of moderate length. Fig. 3 shows the apodemes and also the virga and plate between bases of gonocoxites, sternapodeme narrow, oral projections weak.



Figures 1 - 5. *Metriocnemus capensis*. Adult male: 1. head; 2. hypopygium; 3. apodemes. Adult female: 4. genitalia; 5. seminal capsules and ducts.

ADULT FEMALE (N = 1 mounted)

Close to generic definition of Sæther (1977).

Body length. 2.mm.
Wing length. 2.5mm

Colour. Similar to male except for abdomen tergite I light, tergites II VI anterior half dark brown, posterior light, giving a striped effect.

Head. AR 0.3, 5 flagellomeres, last with large terminal seta, no frontal tubercles; eyes similar to male, setation similar to male. Length of palp

segments 36, 42, 186, 180, 270 µm. No subapical sensillae on segment 3.

Thorax. Setation: lateral antepronotals 18, dorsocentrals 70, mostly biserial, posterior prealars 37, biserial, scutellars 15. Acrostichals beginning near antepronotum.

Wings. Similar to male but extended costa reaches almost to the wing tip.

Legs. LR fore 0.70, mid 0.40, hind 0.36. No sensilla ehaetiea on tarsomeres.

Genitalia (Figs. 4, 5). Gonopophysis VIII, ventrolateral lobes large and rounded (a), dorsomedial lobes (b) small and pointed; a small apodeme lobe without setae (c) appears to be present, gonocoxapodemes light, narrow and joined. Gonocoxite IX large with about 18 setae, coxasternapodemes, dark, narrow and curved, segment X without setae, postgenital plate somewhat triangular, cerci large, 144µm, pediform. Seminal capsules (Fig. 5) brown in oral ¾ with neck, 78 µm without neck, ducts looped, narrow at neck but widening at start of loop to a long glandular portion, distinct bulbs before common opening.

SPECIMENS EXAMINED. 3♂ and 1♀ from small waterfall, tributary of Silvermine River, Cape Peninsula, 34.05S, 18.25E, 26 xi 1995. Holotype ♂ cat. SAC18A and paratype ♂ cat.SAC19A, paratype ♀ cat. SAC 35E. Collector ADH.

COMMENTS. The male is somewhat atypical for the genus because of its reduced inferior volsella, but according to Cranston, Oliver and Sæther. (1989) this also occurs in some other species.

ETYMOLOGY. *capensis* Latin, referring to the Cape Of Good Hope.

ECOLOGY. The adults were emerging from moss-covered rock within a small waterfall.

DISTRIBUTION. Known only from the Cape Peninsula, Western Cape Province.

CHIRONOMINI

Kribiothauma pulchellum Kieffer 1921 **(Figs 6-10)**

Kribiothauma pulchellum, Freeman 1958.

The adult male studied by Freeman had been pinned and had suffered some distortion. A male preserved in alcohol is described here, as well as a female and a probable larva. The male conforms to Freeman's (1958) generie definition, including the antenna without long plume setae.

ADULT MALE (N=2 mounted)

Body length. 1.7 - 1.9 mm

Wing length. 0.9 mm

Colour. whole body dark brown when mounted, almost black in alcohol.

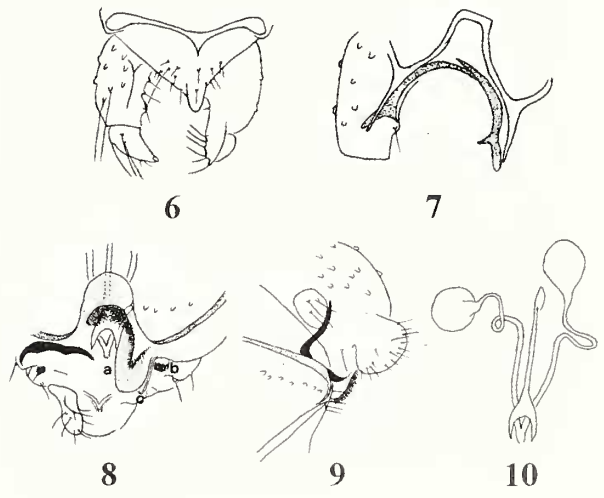
Head. AR 0.2. 13 flagcllomeres, plume setae short. Eyes bare. Frontal tubercles very small. Length of palp segments 24, 27, 33, 63, 114 µm. No subapical sensilla on segment 3.

Thorax. Antepronotum small and short, not visible from above. No scutal tubercle. Setation: lateral antepronotals nil, acroctichals 5, dorsocentrals 12, posterior prealars 3, scutellars 4 per side.

Wings. Colour as in Freeman (1958, photograph Plate 2r), most of wing dark with light spots in cells, 2 in r_{4+5}, 3 in m_{1+2}, 2 in m_{3+4}, and irregular spot in anal cell. Setation: brachiolum 1, R 10, R_1 5, R_{4+5}9, squama 3.

Legs. Foretibia with no scale but with long, curved spur with basal half with microtrichia, other tibia with separate combs, one with spur. Pulvillae small. LR fore 1.0, mid 0.45, hind 0.56. SV fore 2.1, BV fore 2.5.

Hypopygium (Fig 6, 7). Anal tergite bands transverse and joined; numerous anal tergite setae; anal point broad and rounded with one dorsal seta; no superior volsella but it may be represented by a process on the gonocoxite with one seta, near a spur of the phallapodeme (Fig 7); inferior volsella large with 5 setae (Fig. 6 right) ; gonostylus short and pointed (Fig. 6 left); apodemes as in Fig. 7.



Figures 6 - 10. *Kribiothauma pulchellum.* Adult male: 6. hypopygium; 7. apodemes. Adult female: 8. genitalia, ventral; 9. genitalia, lateral; 10. seminal capsules and ducts.

ADULT FEMALE (N = 4-mounted)

Three specimens were preserved in alcohol and were used mainly for this description.

Body length. 2.45 - 2.8 mm
Wing length. 1.5 mm
Colour. Similar to male.

Head. AR 0.54; 6 flagellomeres. No frontal tubercles. Length of palp segments 27, 30, 42, 54, 120 µm. No subapical sensilla on segment 3.

Thorax. Similar to male. Setation: lateral antepronotals nil, acrostichals 6, dorsocentrals 11, posterior prealars 3, scutellars 2 per side.

Wings. Pattern similar to male. Setation: brachiolum 1, R 10, R_1 5, R_{4+5} 12, squama 3.

Legs. Spurs and pulvilli like male. LR fore 1.15, mid 0.5, hind 0.66. No sensilla chaetica on tarsi.

Genitalia. (Figs 8, 9, 10). Gonopophysis VIII divided into a large dorsomedial lobe (Fig. 8 a) and smaller ventrolateral (b) and apodeme lobes (c); gonocoxapodemes dark and joined; coxosternapodemes prominent and bent only at lateral tip; gonocoxite small with three setae (Fig. 9); segment X with one seta per side, postgenital plate pointed, cerci small. Seminal capsules spherical with necks (Fig. 10), colourless, spermathecal ducts convoluted with common opening.

SPECIMENS EXAMINED. 1♂ Great Usutu River near Amsterdam, 26.30S, 30.45E, 15 ix 1954 (cat. GEN14), 1♂ & 1♀ Lower Sabie River, Kruger National Park, 25.01S, 31.59E, 30 ix 1960 (cat. GEN 585AM and AN), collected ADH. 3♀ Klein Mooi River, 29. 18S, 29. 58E, 15 iii 1995 (cat. MOI 32AF v, vi, vii), 1♂ Klein Mooi River, 29.13S, 29.53E, KwaZulu-Natal 4 iv 1995 (cat. MOI 65CA), collectors F C de Moor and team.

COMMENTS. The gonostylus illustrated here (Fig. 8) differs markedly in shape from that in Freeman (1958) (cat. GEN14), but his specimen was originally pinned and not properly relaxed; another pinned specimen, GEN 585AM, still shows the same distortion after treatment with NaOH. There is no superior volsella but a small process half-way down the gonocoxite in the vicinity of a spur on the phallodeme, may be a rudiment . In the female there is no reduction of the genitalia that are like those of other species with single tibial spurs such as *Polypedilum* (Sæther 1977, Harrison 1996).

ECOLOGY. All the South African specimens were collected alongside rivers, those from KwaZulu-Natal in light traps.

DISTRIBUTION. Kribi in Cameroons; South Africa: Mpumalanga, KwaZulu-Natal.

Putative ***Kribiothauma*** **sp.** larva **(Figs 11-14)**

The larvae described here came from large samples taken from the Klein Mooi River on the same date (15 iii 1995) and place where adults of *Kribiothauma pulchellum* were caught in a light trap. These were the only chironomid larvae found in the river that did not belong to known genera and that approximated to *K. pulchellum* in size.

Colour: Head capsule pale yellow, body darkly pigmented, claws dark, procercus dark with light cerci.

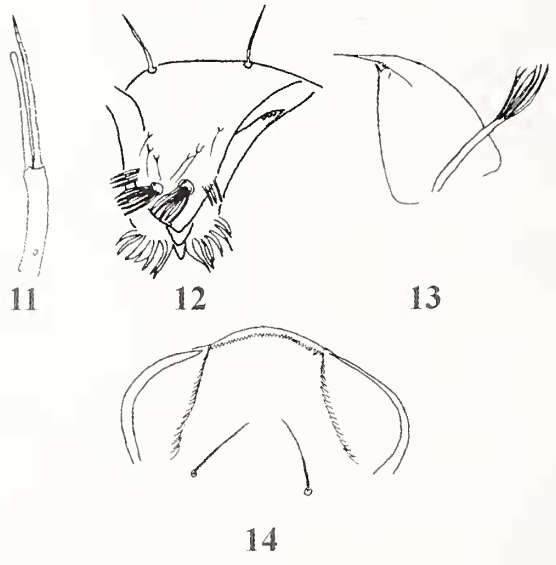
Body length. 4.0 mm
Head capsule length. 264 µm

Antenna. (Fig. 11) 56 µm, AR 1.25; 5-segmented, segment 2 membranous, blade reaching tip of segment 2, Lauterborn organs and style could not be detected.

Labrum. (Fig. 12) SI with 5 branches, remaining S setae simple, labral lamella small and simple, pecten epipharyngis a simple scale, premandible with one apical tooth.

Mandible. (Fig. 13) apical tooth long and needle-like, three small, pointed accessory teeth, basal tooth pointed, seta subdentalis not detectable, seta interna large.

Mentum. (Fig. 14) very characteristic, teeth light and very numerous, lateral teeth fairly large but continuous with a row of very small central teeth, ventromental plates lying lateral to main mentum and contiguous with it, no striations.



Figures 11 - 14. *K. pulchellum* probable larva: 11. antenna: 12. labrum; 13. mandible; 14. mentum.

Maxilla. the maxillary palp is reduced but the lacinal chaetae are well-developed.

Body. Parapods normal, procercus about as long as wide with 6 long setae, claws simple, no body setae, anal tubules short and pointed much shorter than parapod.

SPECIMENS EXAMINED. 3 from Klein Mooi River, 29.13S, 29.53E, 15 iii 1995 (cat. MOI 34M), one from Namibia, side channel alongside Kunene River, sediment on stones. 17.13S, 13.38E, 28 xi 1998 (eat. KUN 146D), collectors F C de Moor and team.

COMMENTS. The structure of the labrum places the larvae with those not belonging to the *Harnischia*-group but the highly aberrant mentum makes it impossible to relate them to any other larva described so far.

It would not be surprising if it turns out to be the larva of *Kribiothauma pulchellum* as this is an aberrant species.

***Pagastiella* sp. A (Figs 15-16)**

MALE (N=1 mounted)

Minute midge originally pinned.

Close to generic definition by Cranston, Pinder, Dillon and Reiss (1989).

Colour. Body uniform dark brown, legs and hypopygium lighter.

Wing length. 0.96 mm

Body length. 1.4 mm.

Head. AR 0.7. Frontal tubercles not apparent. Length of palp segments 22, 22, 47, 62, µm. Two subapical sensilla on segment 3.

Thorax. Antepronotal lobes tapering, dorsally separate, well overreached by scutum, very small scutal tubercle. Setation: Lateral antepronotals nil, dorsocentrals 4, posterior prealars 2, scutellars 1.

Wing. Damaged, costa not extended, anal lobe weak, squama with one long seta.

Legs. foretibia damaged, mid and hind tibia with short separate combs, inner comb only with short straight spur. Legs too twisted to measure LR. No sensilla chaetica on mid and hind tarsomeres. Simple pulvilli present.

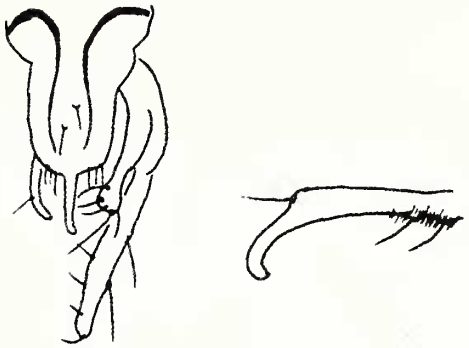
Hypopygium (Figs 15 & 16) anal tergite bands strong, dark and separate enclosing 2 long median anal tergite setae, few apical setae. Anal point distally broadened, apically pointed and downturned. Superior volsella (Fig.16, lateral view) digitiform, downturned, one long distal seta, two basal setae and basal microtrichia. Inferior volsella distally club-shaped with a few curved setae and one straight apieo-ventral seta. Gonostylus long and narrow, apically rounded.

SPECIMEN EXAMINED. 1♂, originally pinned, from Ndumu Game Reserve, KwaZulu-Natal, 26.53S, 32.18E, 19 xi 1959, netted (cat. GEN265Y), collector ADH.

COMMENTS. Fits into the rather broad generic definition and falls into the species group with only inner combs with spurs on the mid and hind tibia and with squamal setae. Its very small size was probably due to the fact it was bred in very warm, subtropical conditions. This one incomplete specimen was insufficient for creating a new species.

ECOLOGY. The region had small shallow ponds and slow-flowing streams. It is situated at low altitude in the sub-tropics.

DISTRIBUTION. Known only from this locality.



15 16

Figures 15 & 16. *Pagastiella sp. A.* Adult male: 15. hypopygium; 16. superior volsella, lateral.

Paralauterborniella nigrohalteralis
(Malloch 1915)

Three male specimens recognised as belonging to this genus were collected from the Wilge River, Free State, one in December 1958 and two in February 1959. They were all mounted on pins but two were mounted on slides in 1995. Eight male specimens were collected from the Kunene River, Namibia, and preserved in alcohol. The genus *Paralauterborniella* has not been found previously on the African continent, nevertheless, this species seems to be indistinguishable from *nigrohalteralis* .

SPECIMENS EXAMINED. 3♂ from the Wilge River, Swinburne, Free State, Vaal River Catchment, 28.20S, 29.16E, netted, 12 ix 1958 (cat. VAL 486H

and 526C, H, K), collector ADH. 15♂ from light traps alongside the Kunene River, Namibia from the following sites: Site 9 Oonjana, at a large isolated pool next to river (no flow), 17.00S, 13.25E, 17 xi 1997 (cat. KUN65N.), Site 11, at camp site above Epupa Falls, wide deep slow-flowing water, 17.00S, 13.15E , 18 xi 1997 (cat. KUN74AQ), Site about 800m upstream from Site 11 wide slow-flowing section of river where boat crosses to Angola, 17.00S, 13.15E, 19 xi 1997 (cat. KUN.84K), Hoanib River at communal Ongongo camp site, limestone bedrock in swift current with *Chara,* other algae and leaf detritus 19.08S, 13.49E, 22 xi 1998 (cat. KUN105E, 105J), Ficus campsite Site 6, upstream of rapids along side pools with grassy verge and little or no flow, 17.13S 13.29E, 29 xi 1998 (cat. KUN147F), collectors F C de Moor and team.

COMMENTS. These specimens were very much darker than the "light brown" of Cranston *et al.* (1989), but otherwise fit well into their generic diagnosis. There is nothing to distinguish them from the Holarctic *P. nigrohalteralis* (Malloch) (Cranston, Dillon, Pinder and Reiss 1989, Pinder 1978).

ECOLOGY. According to Cranston, Dillon, Pinder and Reiss (1989) the larvae are found in littoral soft sediments of lakes. These midges could have eome from a slow-flowing section of the Wilge River but the river tends to be fast-flowing at Swinburne as it is near it source in the mountains. The Kunene River specimens were caught in light traps alongside the river but, although larval samples were taken, no larvae of this genus were found.

DISTRIBUTION. These are the only records from Africa for this Holarctic species.

***Polypedilum (Pentapedilum) chutteri* sp.nov.**
Figs 17-20

All specimens were pinned originally.

ADULT MALE (N = 3 mounted, 5 pinned)

As per generic definition by Cranston, Dillon, Pinder and Reiss (1989)

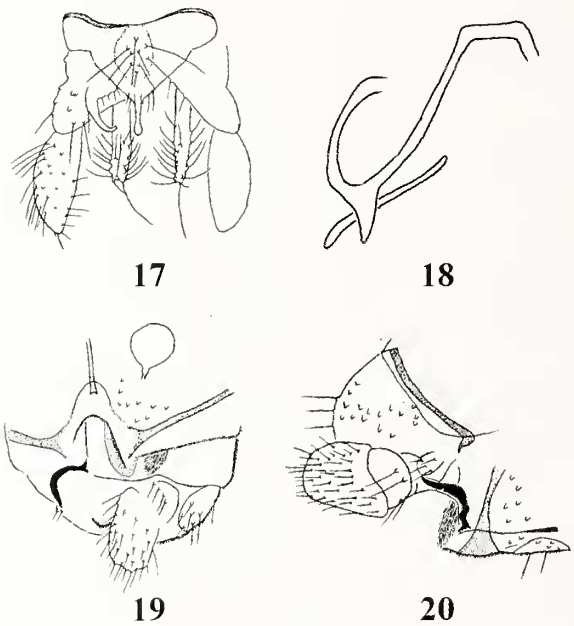
Body length. 3.5 mm
Wing length. 2.3 mm
Colour. Head, thorax, legs abdomen and hypopygium uniform dark brown, halteres brown, and no rings on abdomen.
Head. AR 0.7 - 0.73. No frontal tubercles; vertical setae 11. Length of palp segments 45, 45, 123, 105, 132 µm. Two subapical sensilla on segment 3.

Thorax. Setation: lateral antepronotals nil, acrostichals 14, dorsocentrals 26 uniserial, posterior prealars 7, scutellars 6 uniserial.

Wings. No anal lobe; macrotrichia on wing membrane, r_{4+5} over whole cell but reduced to a single row in proximal third, m_{1+2} over whole cell distal to fork but reduced to one row proximally, m_{3+4} over whole distal half but reduced to one row proximally, anal eell with one row alongside anal vein and a row along outer edge. Vein setation: brachiolum 1, R 24, R_1 24, R_{4+5} 16, numerous setae on other veins, squama 6.

Legs. Fore tibia with scale with long spur; mid and hind tibiae with one spur; pulvilli short; LR fore 1.3, mid 0.4 - 0.5, hind 0.6; SV fore 1.9, BV fore 1.4; no sensilla chaetica on tarsi.

Hypopygium (Figs. 17, 18). Anal bands fused basal to median anal tergite setae which are in a well delimited oval area, few small anal tergite setae lateral to anal point which is long with rounded point; superior volsella with 4 basal setae and one on curved digitiform extension; gonostylus broad. Apodemes in Fig. 18.



Figures 17 - 20. *Polypedilum (Pent.) chutteri.* Adult male: 17. hypopygium; 18. apodemes. Adult female: 19. genitalia, ventral; 20. genitalia lateral.

ADULT FEMALE (N = 2 mounted, 2 pinned)

The structure of the genitalia fits in well with Sæther's (1977) definition.

Body length. 3.1 mm.

Wing length. 2.3 mm.

Colour. Similar to male

Head. AR 0.5, 6 flagellomeres ; no frontal tubercles. Length of palp segments 40, 40, 111, 90, 150 µm. No subapical sensilla on segment 3.

Thorax. Setation: lateral antepronotals nil, acrostichals 9, dorsocentrals 26 uniserial, posterior prealars 6, scutellars 6 uniserial

Wings. no anal lobe. Macrotrichia on membrane similar to male. Vein setation: brachiolum 1, R 25, R_1 24, R_{4+5} 32, numerous setae on other veins.

Legs. Scale and spur on fore tibia and other tibial spurs similar to male. LR fore 1.3, mid 0.4, hind 0.6. No sensilla chaetica on tarsi.

Genitalia (Figs 19, 20) Gonocoxite VIII divided into a dorsomesal lobe and small ventrolateral lobe, apodeme lobe not discernible; gonocoxapodemes light in colour, branching onto dorsomesal lobes, the other branches joined anteriorally; coxosternapodemes dark and curved; gonocoxite IX with 4-6 setae; segment X with 4 setae per side; postgenital plate broadly triangular; labia not discernible. Seminal capsules small and spherical; the ducts were destroyed by the NaOH.

SPECIMENS EXAMINED. 8♂ and 4♀ netted by Dr F.M.Chutter near Lindique's Drift, Vaal River, 26.44S, 27.36E, 24 iv 1958 (cat. VAL383AN, AP, AS-AW, AY-BE). Holotype ♂ VAL383AU, paratype ♂ VAL383AV, AY; paratype♀ VAL383BA.

COMMENTS. The male of this species keys to *Polypedilum (Pentapedilum) wittei* on Freeman's (1958) key but it differs as follows (*wittei* in brackets): colour uniform dark brown (yellowish or reddish with darker thoracic markings and dark bands at the apices of the abdominal segments), AR 0.7-0.73 (2.0), LR fore leg 1.3 (2.0).

ETYMOLOGY . Named in honour of Dr F M Chutter.

ECOLOGY. The collecting site suggests that the larvae would have been living in the river.

DISTRIBUTION. Known only from the collecting site on the Vaal River

Polypedilum (Polypedilum) hastaferum sp. nov.

ADULT MALE (N=3 mounted)

As per generic definition by Cranston, Dillon, Pinder and Reiss (1989)

Body length. 2.1 - 2.6 mm

Wing length. 1.5 mm

Colour. Light brown, vittae dark brown.

Head. AR 0.3. Small frontal tubercles. Length of palp segments: 24, 36, 105, 123, 195 µm. Three subterminal sensilla on segment 3.

Thorax. Setation: lateral antepronotals nil, dorsocentrals 30-32 partly biserial, posterior prealars 8, scutellars 4.

Wings. No anal lobe. Setation: brachiolum 1, R 21, R_1 20, R_{4+5} 50. squama 4.

Legs. Foretibia with scale and small spur, mid and hind tibia with one long spur curved at tip. LR. fore 1.3, mid 0.6, hind tarsi missing. Sensilla chaetica on tarsomere 1, midleg 2, hindleg all tarsi missing.

Hypopygium. (Figs 21, 22). Anal tergite bands long, almost reaching anal point, enclosing anal setae, but not joined, anal point broad, shaped like a broad spear and notched on both sides, superior volsella curved and pointed with 2 setae on base and 1 subapical seta; inferior volsella parallel-sided with strong apical setae; gonostylus narrow.

Figures 21 & 22. *Polypedilum (Poly.) hastaferum sp. nov.* Adult male: 21. genitalia; 22. apodemes.

Apodemes in Fig. 22 phallapodemes curved and pointed and meeting centrally.

SPECIMENS EXAMINED. 2♂ from Mooi River (KZN) at Retreat Farm from light trap, 29.27S, 29.97E, 01 v 1996 (cat. MOI 54CT), 1♂ Mooi River (North East Cape), Riverside, 31.05S, 18.00E, from light trap 21-22 iii 1991 (cat. ECR 54AA 5). Holotype ♂ MOI 54CW, paratype ♂ MOI 54 CT, collectors F. C. de Moor and team.

COMMENTS. Bjørlo et al. (2000) state that "the subgenus *Tripodura* is characterised by having a trifid anal point or at least shoulders to each side of the anal point and/or a superior volsella without apical extensions"; the trifid appearance is produced by lateral projections on tergite IX. Some *Tripodura* spp.,

such as the Nearctic *P.(T.) simulans* Townes and *P.(T.) digitifer* Townes, also have notches towards the tip of the anal point. *P. hastaferum* has the notches but not the lateral projections or shoulders so it cannot be placed in the subgenus *Tripodura.*

ETYMOLOGY: from Latin *hasta,* a spear, *fero*, I bear.

ECOLOGY. It appears that, from the collecting sites, the larvae live in rivers.

DISTRIBUTION. Known only from the foothills of the Drakensberg Mountains from the North East Cape to KwaZulu-Natal.

***Skusella freemani* sp. nov. (Figs 23-29)**

ADULT MALE (N=2 mounted)

As per generic definition (Freeman 1961).

Body length. 5.1 mm
Wing length. 2.7 mm

Colour. Head and antennae brown, thoracic stripes, preepisternum and postnotum brown on a lighter background, legs yellowish, all femora with dark brown distal rings, tibiae of fore and mid leg with proximal third markedly darker and dark at tips, tibia of hind leg with proximal third faintly darker and darker at the tip; abdomen: tergite I light brown, tergites II & III light brown with narrow dark stripe anally, tergites IV-VIII light brown but VI-VIII somewhat darker, hypopygium dark brown.

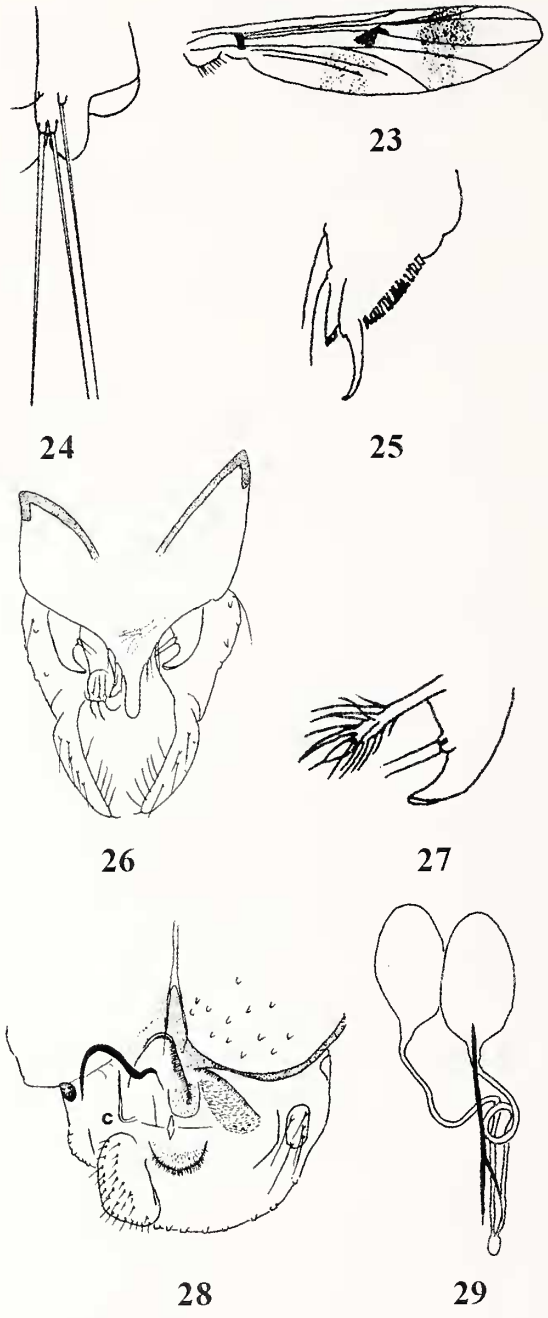
Head. Antenna with 13 flagellomeres. AR 1.5; eyes with parallel-sided dorsal extension separated by width of extension. Length of palp segments 60, 45, 189, 201, 330 µm. No apical sensilla on segment 3.

Thorax. Antepronotum not reaching front of notum. Setation: lateral antepronotals 1, dorsocentrals 11 uniserial, posterior prealars 3, scutellars 6 uniserial.

Wings (Fig. 23). With dark markings, small spot in base of cell r_{4+5} and larger spots in m and cu forming a band, another more distal band from costa through r_{2+3} , r_{4+5}, m_{1+2} and m_{3+4}. Costa not extended. Setation: brachiolum 2, R 26, R_1 25, R_{4+5} 34, squama 10.

Legs (Figs 24, 25). Fore tibia with scale and no spur (Fig. 24), mid and hind tibiae with combs fused, with one spur (Fig. 25), pulvilli small; LR fore 1.8, SV fore 1.4, BV fore 1.8, other tarsi missing.

Hypopygium (Figs 26, 27). Anal tergite bands strong, well separated, ending far from base of anal point; no median anal setae, a few setae on either side of anal point, anal point of holotype rounded at tip (Fig. 26) but more pointed on paratype; superior volsella hooked with 2 setae on broad base, median volsella (Fig. 27) cylindrical with tuft of setae, inferior volsella shorter than



Figures 23 - 29. *Skusella freemani*. Adult male: 23. wing; 24. fore tibia, scale; 25. hind tibia, combs; 26. hypopygium; 27. median volsella. Adult female: 28 genitalia, ventral; 29. seminal capsules and ducts.

anal point, club-shaped with strong curved setae; gonostylus moderately narrow.

ADULT FEMALE (N=1 mounted)

Body length. 4.4 mm
Wing length. 2.6 mm
Colour. Paler than male without darker thoracic stripes, preepisternum, postnotum and legs yellowish with no dark markings.
Head. Six flagellomeres. AR 0.44. Eyes similar to male. Length of palp segments 60, 45, 192, 207, 315 µm. No subterminal sensilla on segment 3.
Thorax. Antepronotum not reaching to front of notum. Setation: lateral antepronotals 1, dorsocentrals 15 uniserial, posterior prealars 3, scutellars 10 unserial.
Wings. Shape and pattern similar to male with spot at base of cell r_{4+5}. Setation: brachiolum 2, R 26, R_1 27, R_{4+5} 52, squama 6.
Legs. Structure of foretibia similar to male; combs and spurs on other tibia similar to male. All tarsi missing.
Genitalia (Figs 28, 29). Gonopophysis VIII divided into dorsomesal lobe, large ventrolateral lobe and small apodeme lobe without setae (Fig 28c); gonocoxapodemes light in colour and appear to be joined; coxosternapodemes dark and bent; gonocoxite IX small with 5 setae; segment X without setae, postgenital plate rounded, cerci small. Seminal capsule (Fig 29) ovoid and colourless with short necks, spermathecal ducts narrow and convoluted with common opening.

SPECIMENS EXAMINED. 1♂ and 1♀ Molopo Oog perennial spring, light trap, 25.53S, 26.01E, 4 xi 1993 (cat. TDW 46K(4) both), and 1♂ Malmani Oog alkaline spring, light trap, 25.49S, 26. 04E, 4 xi 1993 (cat. TDW 61D(2)), Northern Province, South Africa. Holotype ♂ TDW 46K(4), and paratype ♂ TDW61D(2), paratype ♀ TDW.46K(4) . Collectors F.C. de Moor and team.

COMMENTS. Freeman (1961) created *Skusella* for the Australian species *subvittatus* and states: "At first sight, this genus is very similar to *Lauterborniella,* but the absenee of anterior tibial spur and the presence of a appendage 2a, combined with the presence of a reduced squamal fringe in the type species (that is only 2 setae) suggests a different genus". Appendage 2a is the median volsella. He also placed the African *Kribiomimus pallidipes* Kieffer into this genus in spite of its bare squamus. *S. freemani* differs from *pallidipes* that has a similar wing pattern, as follows (males): (*pallidipes* in brackets): wing pattern dark (wing pattern light grey), squama with setae (squama bare), femora with dark patterns (femora without markings).

There are three genera of Chironomini with median volsellae found in Africa south of the Sahara: *Paratendipes*, *Skusella* and *Conochironomus* (Cranston and Hare 1995). *Conochironomus* is distinguishable from the other two species by its obvious median tubercle on the scutum. The main differences between the others are (*Skusella* in brackets): foretibia with no scale (with scale) with spur (no spur); mid and hind tibia, both combs with spur (one comb with spur). These three genera differ from *Lauterborniella*, *Stelechomyia* and *Zavrelliella* as the combs on mid and post tibia of the latter three are widely separated and they lack median volsellae. Dr P. A. Cranston, who has worked on species of the genus *Skusella* from Africa and Australia, informs me (personal communication) that this definition of the genus is close to his.

The female of *S. freemani* differs from those of *Paratendipes albimanus* (Meigen) (Sæther 1977) and *P. striatus* Kieffer (Harrison 1996) in that these have a simple gonopophysis VIII.

ETYMOLOGY. This species is named in honour of Dr Paul Freeman who established the genus.

ECOLOGY. All adults were caught in a light trap in the vicinity of permanent alkaline springs or riffles running out of them.

DISTRIBUTION. Known only from the Northern Province, South Africa.

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